INDIANA'S LAKE MICHIGAN CREEL SURVEY RESULTS 2004

INTRODUCTION

Since the late 1960's, salmon and trout have been an important component of the Lake Michigan fish community. Lake trout *(Salvelinus namaycush)* stocking began in 1965 and coho salmon *(Oncorhynchus kisutch)* and Chinook salmon (*Oncorhynchus tshawytscha)* were introduced from the Pacific Northwest in 1966 and 1967 (Eshenroder et al., 1995). Rainbow trout (*Oncorhynchus mykiss)*, or steelhead and brown trout *(Salmo trutta)* were also extensively stocked. Of the five major salmonids stocked, only lake trout is released with the objective of rehabilitation (i.e., to sustain native stocks through natural reproduction). The others are stocked to provide angling opportunities and to utilize alewives *(Alosa pseudoharengus)*, which entered the Lake Michigan system in 1949 from the Atlantic Ocean via the Welland Canal. The Welland Canal joined Lakes Erie and Ontario to bypass Niagara Falls, a natural barrier for aquatic organisms.

The Indiana Department of Natural Resources (IDNR), Division of Fish and Wildlife, has stocked trout and salmon along the southern shoreline of Lake Michigan since 1969. The area stocked extends from Whiting to Michigan City and includes sites along the St. Joseph River, Trail Creek and the East Branch of the Little Calumet River. The number of trout and salmon stocked 2000 through 2004 ranged from 969,559 to 1,199,209 and averaged 1,103,435 fish per year (Table 1).

Table 1. Number of trout and salmon stocked in Lake Michigan by Indiana Department of Natural Resources, 2000 through 2004.

Species	2000	2001	2002	2003	2004
Chinook	417,776	450,715	253,000	232,395	237,052
Coho	157,208	157,048	224,797	233,248	236,026
Steelhead	394,575	591,446	605,181	591,991	613,077
Brown Trout	0	0	35,000	40,400	46,238
TOTAL	969,559	1,199,209	1,117,978	1,098,034	1,132,393

Since 1973, the IDNR has conducted lake and stream creel surveys to assess fish harvest and fishing pressure. Harvest, effort and biological data are used to monitor trends in the Lake Michigan fishery. A creel program also exists for the St. Joseph River, however, the catch, harvest and effort estimates presented in this report are exclusive of the St. Joseph River project.

The Lake Michigan creel survey was conducted from March to December. Data were collected by interviewing anglers at four sites along the Indiana shoreline of Lake Michigan (Hammond, East Chicago, Burns Waterway/Portage, Michigan City) and several sites along Trail Creek, the East Branch of the Little Calumet River and Salt Creek. The survey of anglers fishing from boats and piers was conducted April 1 through October 31. Catch and effort by stream anglers were recorded in March and July 1 through December 31. These time frames represent the periods when the majority of the fishing population can be reached.

Since only a subset of all fishing locations are included in the creel survey, the yearly assessment of fish harvest and fishing pressure presented in this report can only provide an *index* of fishing quality. Harvest and effort are expanded based upon the fishing day length and not expanded to non-surveyed areas.

Additionally, due to the migratory nature of trout and salmon and Indiana's close proximity to neighboring states' borders (Illinois and Michigan), many boat trips were actually conducted in other states' waters. The estimates provided in this report represent estimates of fish returned to Indiana ports.

For a detailed description of the lake and stream creel survey sampling designs, see Palla (2000).

RESULTS

A total of 3,536 angler interviews, representing 7,073 anglers, were conducted to determine how many hours they fished, the species of fish they preferred to catch, and the number of species of fish harvested and released (i.e., catch).

Lake Michigan boat anglers dominated both the effort and catch, fishing out of Indiana ports an estimated 210,239 hours with a catch of 300,962 fish during 2004. Boat anglers represented 69.0% of the angler hours (Table 2) and 88.3% of the total catch (Table 3).

Table 2. Estimated angler hours from the IDNR Lake Michigan creel survey during 2004, based on total effort.

Boat anglers	210,239	(69.0%)
Pier anglers	30,180	(10.0%)
Stream anglers	64,099	(21.0%)
TOTAL	304,518	

Table 3. Estimated catch from the IDNR Lake Michigan creel survey during 2004, based on total effort.

Boat anglers	300,962	(88.3%)
Pier anglers	33,859	(9.9%)
Stream anglers	6,018	(1.8%)
TOTAL	340,839	

The months that accounted for the highest boat fishing effort included May (44,974 hours), followed by June (39,417 hours), April (36,603 hours) and July (35,215 hours). June (9,957 hours), July (5,866 hours) and April (3,926 hours) were the months of greatest pier fishing activity. Stream anglers primarily fished the months of October (15,351 hours), July (14,463 hours) and September (13,765 hours).

By species, the most abundant fish in the catch were yellow perch. For salmonid species, the total catch was dominated by coho salmon, comprising 56.1% of the total. Chinook salmon harvest was second to coho, with 26.8% of the total, followed by steelhead (13.5%), brown trout (2.9%) and lake trout (0.7%, Table 4).

Table 4. Estimated salmonid and yellow perch catch from the IDNR Lake Michigan creel survey during 2004, based on total effort.

Yellow perch	202,819	
Salmonids	42,519	
	245,338	
coho	23,838	(56.1%)
Chinook	11,414	(26.8%)
steelhead	5,721	(13.5%)
brown trout	1,238	(2.9%)
lake trout	308	(0.7%)

Trout and Salmon

In Indiana waters of Lake Michigan, the success of a fishing season is strongly dependent upon several factors. Including, but not limited to, weather patterns, near shore water temperatures and total angler effort. Positive and/or negative changes to these elements can significantly alter the outcome of a particular fishing year.

During 2004, a total of 197,291 hours were spent pursuing trout and salmon. A total of 39,499 salmonid were harvested (Table 5).

This was a 32.1% decrease in angler effort and a 44.8% decrease in harvest compared to the 2003 season when 290,486 angler hours were spent fishing to harvest 71,566 fish (Table 5). Based solely upon the harvest numbers presented in Table 5, the 2004 salmonid season could be categorized as mediocre compared to the prior four fishing seasons.

Harvest ranged between 24% to 58% lower compared to the prior season for coho salmon (-57.2%), steelhead (-54.5%) and lake trout (-24.9%, Table 5). However, an exceptional fishery for Chinook salmon existed during 2004, with Chinooks accounting for the greatest one-year increase in harvest by species. The number of Chinook salmon harvested was similar to harvest levels observed in 2000 (Table 5). The number of brown trout harvested was also higher compared to the prior fishing season.

Since boat anglers account for nearly 90.0% of the total catch, the number of salmonids boat anglers harvest directly influences the overall success of a trout and salmon fishing season. Typically, the largest catches for trout and salmon occur within the spring months of April to June. Dependent upon water temperatures, good catches can even continue into the month of July (Palla 2003). In 2004, however, both the salmonid fishing-effort and harvest were significantly reduced between April and July. For comparison, 64,158 trout and salmon were harvested by boat anglers from April through July of 2003; whereas, only 29,997 were harvested during the same time period in 2004. Salmonid angler-effort also declined significantly from 155,599 angler hours (April-July 2003) to 95,444 angler hours (April-July 2004).

Why such large declines? Two influences, weather patterns and near shore water temperatures, likely contributed to these observed reductions. Fishing conditions were difficult for anglers during 2004, especially during the spring and early summer months (April through July).

Table 5. Estimated trout and salmon harvest from the IDNR Lake Michigan creel survey during 2000 through 2004, based on directed effort.

Year	Chinook	Coho	Steel-head	Lake Trout	Brown Trout	Total	Directed Effort (hrs)
2000	11,006	76,227	14,968	3,230	2,787	108,218	353,750
2001	7,864	72,171	9,605	3,910	2,244	95,794	334,359
2002	14,483	100,351	13,178	1,221	2,378	131,611	362,228
2003	7,092	53,935	9,223	374	942	71,566	290,486
2004	10,966	23,079	4,199	281	974	39,499	197,291

Additionally, decreased salmonid angler-effort also influenced the number of trout and salmon harvested between April and July.

Lakewide, the 2004 salmonid sport harvest was similar to what Indiana anglers experienced. An overall downward trend in the number of coho salmon, steelhead trout, brown trout and lake trout harvested with a record-breaking harvest of Chinook salmon (Breidert et al. 2005). The lakewide sport Chinook harvest reached 8.5 million pounds, the highest level on record since 1986. The observed decreases in all trout and salmon species, with the exception of Chinook salmon, could possibly be a function of the large number of Chinook salmon available in Lake Michigan. Sport bag limits were filled with Chinook salmon and anglers likely did not spend additional effort pursuing other salmonid species.

Yellow Perch

Boat and pier anglers harvested an estimated 144,442 perch, a decrease of 30.4% compared to the 2003 harvest of 207,401 perch (Table 6). The number of hours anglers pursued perch also decreased by 17.8%, from 119,200 (2003) to 97,971 (2004) hours, respectively.

Boat anglers also account for the majority of the yellow perch harvest and effort, representing 95% and 82% of the total. Thus, the number of yellow perch boat anglers harvest directly influences the overall success of a perch fishing season.

During 2004, the weather also attributed to the perch harvest and effort declines, specifically during the months of July and August. May through August are typically the primary months perch are caught from the lake proper by both boat and pier anglers.

Table 6. Estimated yellow perch harvest, catch and effort from the IDNR Lake Michigan creel survey, 1995 through 2004, based on directed effort.

Year	Effort	Harvest	Harvested + Released
1995	55,900	69,770	80,312
1996	76,360	137,791	159,168
1997	33,938	32,390	34,532
1998	40,125	37,532	50,494
1999	90,622	132,217	227,304
2000	96,537	129,988	215,382
2001	122,770	140,089	216,341
2002	97,161	124,656	198,275
2003	119,200	207,401	309,561
2004	97,971	144,442	201,906

Variable weather patterns (i.e., north winds) kept yellow perch anglers off the lake and scattered the fish within the near shore waters.

Annual yellow perch harvests have fluctuated on a yearly basis, but experienced an overall downward trend beginning in 1994. Harvest fell to less than 67,000 fish. In 1997, harvest fell to less than 33,000 perch. Declining yellow perch population densities in Lake Michigan and an almost complete lack of recruitment were the main reasons for the decline in harvest (Clapp and Dettmers, 2004). Harvest peaked in 2003 with more than 207,000 fish taken.

Currently, the fishery is mostly supported by the 1998 year class. Sex ratios of this 1998

year class consist of 40% to 50% female (Paul Allen, Ball State University, personal communication). Further, the females of the 1998 year class comprise the majority of the spawning stock abundance of the lakewide population. The dominance of females in the population, in addition that these fish are growing faster and larger than their male counterparts, could result in sport anglers targeting the larger, reproducing females. This could result in a further reduced spawning stock.

An additional factor which may negatively impact the perch population is the number of fish caught and released. The 2004 catch of sport-caught perch is approximately 40% higher than the harvest (Table 6). This illustrates that a large percentage of perch were released after capture. Although mortality from handling stress is likely, the magnitude of mortality and its overall impact upon the perch population is unknown.

Based on Ball State University trawl data, the 2004 year class in southern Lake Michigan was around half the size of 2002 and 2003 (142 perch/hour and 133 perch/hour, respectively), but was statistically different from zero. A better measure of the 2004 year class strength will be determined from the 2005 trawl data. Since it takes perch a minimum of four to five years to reach a size where they would be considered acceptable to sport anglers, we do not anticipate changes to the current sport harvest regulations or commercial restriction in Indiana waters.

Site Comparisons

Within Indiana waters of Lake Michigan, the port of Michigan City accounted for the highest boat and pier salmonid-effort and harvest (Table 7). This port also accounted for the highest yellow perch sport harvest and effort (Table 7).

Within the tributaries, Trail Creek accounted for the greatest angler effort and harvest from the three Lake Michigan tributaries surveyed (Table 7).

Catch and release continues to be popular with stream anglers. On Salt Creek, anglers released steelhead more often than they harvested (Table 7). Sixty percent of the fish caught on Salt Creek were released. Trail Creek and East Branch of the Little Calumet River anglers were opposite, as the majority of their catch was harvested. Steelhead was the most often released salmonid from the three tributaries.

Black Bass Species

Black bass, a near-shore species, play an important role in the Lake Michigan boat and pier fisheries. Within the past ten years, we have seen a positive response from bass as the addition of prime habitat is added to southern Lake Michigan (e.g., construction of mooring basins in East Chicago and Gary in the mid-nineties for casino vessels). The increase in their abundance has resulted in an increased interest by bass anglers.

Estimated total bass catch was 5,205 fish, with the catch being comprised mainly of smallmouth bass (Table 8). Most fishing occurred from boats, accounting for 78.0% of the catch and 82.8% of the effort. Compared to 2003 harvest and effort levels, the 2004 catch decreased by 25.2% and effort decreased by 53.5% (Table 8). Boat anglers accounted for the greatest one-year change.

Table 7. Estimated harvest of trout and salmon and yellow perch, by site, from the IDNR Lake Michigan creel survey during 2004, based on directed effort.

	Chinook	Coho	Steel-head	Lake Trout	Brown Trout	Yellow Perch	Fishing Effort (salmonids)	Fishing Effort (yellow perch)
LAKE HARVEST								
Michigan City	6,994	8,323	1,188	211	249	83,674	60,594	37,355
Burns Waterway	1,212	3,804	420	46	312	22,959	27,505	24,495
East Chicago	2,085	8,413	338	24	242	23,452	40,270	25,137
Hammond	210	1,084	20	0	54	14,357	4,823	10,984
STREAM No. Fish Harvested								
Trail Creek	279	862	1,817	0	111	---	46,775	---
E. Branch Cal.	67	496	297	0	6	---	10,640	---
Salt Creek	119	97	119	0	0	---	6,684	---

STREAM No. Fish Released	Chinook	Coho	Steel-head	Lake Trout	Brown Trout	Yellow Perch	Total Released
Trail Creek	71	169	657	0	116	---	1,013
E. Branch Cal.	35	37	136	0	23	---	231
Salt Creek	58	44	402	0	0	---	504

The months of June and July accounted for the largest decline in boat effort from 2003 to 2004. Effort fell from 10,123 hours (June and July, combined) in 2003 to 2,781 hours (June and July, combined) in 2004.

Weather conditions, shifting between poor and fair during June and July, likely negatively impacted the boat bass angler-effort.

Both pier and boat anglers practice catch and release when fishing for bass species (Table 8). Of the smallmouth caught by pier and boat anglers, 94.6% of those were released. Boat anglers released 95.2% (3,870) of their catch while pier anglers released 92.2% (1,052).

Of the bass released, the number of sub-legal-sized black bass (less than 14.0 inches) was higher than the number of legal-sized ($\geq$14.0 inches) black bass from the pier fishery. Within the boat fishery, the number of legal-sized bass was higher than sub-legal-sized bass. Higher legal-sized bass releases from the boat fishery are due mainly to the advantages boaters have with fishing access and fishing technology. Boaters typically have advanced equipment and can more easily locate larger fish with increased accuracy than pier anglers.

Table 8. Estimated number of black bass harvested and released by boat and pier fisheries from the IDNR Lake Michigan creel survey during 2003 and 2004, based on total harvest and directed effort.

		No. Harvested	No. Released*	Directed Effort (hrs.)
2003	Boat	367	sub-legal = 1,253 legal = 4,220	13,794
	Pier	78	sub-legal = 902 legal = 135	1,850
2004	Boat	194	sub-legal = 1,789 legal = 2,081	6,020
	Pier	89	sub-legal = 901 legal = 151	1,247

*minimum size limit = 14 inches

Harvest Rates

Relative yearly comparisons of harvest, independent of the magnitude of effort, are possible by expressing the harvest on a per-unit-of-effort basis, known as a harvest rate. With this measure, the long-term trend of fishing success, by species, can be presented for comparison from year to year. Since most harvest rates can be significantly less than one fish per angler-hour, the harvest rates are typically standardized to 100 angler-hours.

For the salmonid species, the combined harvest rate (boat, pier and stream fisheries) was 20.0 (20 fish harvested for every 100-hours anglers spent fishing for trout and salmon). This rate was lower than the ten-year average of 26.5 fish/100 angler-hours (Figure 1).

Harvest rates for coho salmon, steelhead, lake trout and perch were all lower compared to the prior fishing season (Figures 2, 4, 6 and 7). Increases were noted for Chinook salmon and brown trout (Figures 3 and 5). When comparing 2004 harvest rates with long-term averages, Chinook salmon and yellow perch were the only two species that had harvest rates that either equaled or exceeded their ten-year mean (Figures 3 and 7).

Length and Weight Distribution

Lengths and weights are collected from fish harvested in the boat, shore and stream fisheries. Long-term monitoring of this biological data set directly supports fisheries management on Lake Michigan. Not only does the information provide statistics relative to the sizes of fish, but also contributes data upon which policy recommendations can be based. Long-term trends (10-years) are presented only for length data since collection of weight data did not begin until 2000.

Biological data collected on coho salmon showed a mean total length of 20.7 (± 3.1) inches, comparable to the 2003 mean length of 20.1 (± 2.4) and within the ten year average of 19.9 (± 3.0) inches (Appendix 1). Mean coho weight was 3.5 (± 2.1) pounds, which is comparable to the five year mean of 3.1 (± 1.7) pounds (Appendix 1).

Mean Chinook total length was 29.2 (± 4.3) inches and mean weight was 10.0 (± 3.6) pounds (Appendix 1). Both mean length and weight were higher than what was observed in 2003. Mean Chinook weight remains below it's five year average of 10.7 (± 4.8) pounds (Appendix 1).

Mean steelhead total length of 27.7 (± 3.7) inches was equivalent to the ten year average length of 27.6 (± 4.2) inches (Appendix 1). Mean weight increased by approximately 25% compared to 2003 at 8.2 (± 2.8) pounds, which is nearly 4% above the mean weight for the last five years.

The average brown trout length of 22.9 inches (± 4.63) in 2004 was a 10.6% increase over the 2003 season (Appendix 1). Average total length and weight are both higher than the ten and five year mean (Appendix 1).

For lake trout, the mean length and weight of harvested fish has remained relatively stable since 1999 (Appendix 1). Harvest of lake trout has often been more of a function of the availability of other trout and salmon species rather than lake trout abundance. However, population declines due to record-high harvest levels observed in 1998 could also be contributing (Palla 2004). From 1998 to 1999, a decline in the average length of harvested lake trout occurred.

This could be an indication that a notable percentage of larger, older lake trout were removed from the fishery in 1998. The increased 1998 harvest of lake trout directly impacts succeeding years, as those fish are harvested and unavailable for future catch.

For yellow perch, average length decreased from 10.0 inches (± 1.7) in 2003 to 9.5 (± 1.8) inches in 2004. Biological data collected from the sport-harvested perch show a range between 3.9 and 14.9-inches (Appendix1). This is the second time since 1998 when the mean total length has dropped below the ten-year average of 9.8 (± 1.7) inches (Appendix 1). Mean weight was similar to the five-year average of 0.48 (± 0.32) pounds.

Minor Species

Round goby represented the largest portion of minor species caught, contributing 87,013 fish, or 25.5% to the total catch (Table 9). Round gobies were present throughout the southern basin. Gobies listed as harvested are fish that have been caught and killed. This is consistent with Administrative Code 312 I.A.C. 9-6-7 which requires a person who captures a round goby to immediately kill upon capture.

Species Preference

Boat, pier and stream anglers were all questioned which species of fish they preferred to catch from Lake Michigan. A total of 3,504 anglers responded. Forty-five percent of boat anglers included at least one salmonid species in their response. On a species by species basis, boat anglers ranked yellow perch as their most preferred fish (48.7%), followed by Chinook salmon (15.7%), coho salmon (12.6%), steelhead (9.8%) and bass (6.6%). Thirty-three percent of shore anglers included at least one salmonid in their reply. By species, shore anglers also ranked yellow perch as their most preferred fish (54.9%), followed by steelhead (18%), coho salmon (6.6%), bass (6%), no preference (4.3%) and Chinook salmon (3.7%). Stream anglers ranked steelhead as their most preferred fish (81.6%), followed by Chinook salmon (6.4%) and coho salmon (5.4%).

Angler Residency

Of the 3,536 parties interviewed, 3,491 (1,048 pier; 1,231 boat and 1,212 stream) responded to the county of residence question. Thirty percent (1,044) were from Lake County, 18.3% (639) were from

Table 9. Estimated total catch for species other than salmonids, yellow perch or black bass species from the IDNR Lake Michigan creel survey during 2004.

Species	Catch			
	Boat Fishery		Shore Fishery	
	Number Harvested	Total Catch	Number Harvested	Total Catch
Bullhead	---	6	---	---
Catfish	---	34	19	43
Carp	---	18	6	40
Crappie	---	---	25	25
Freshwater Drum	16	138	202	298
Northern Pike	16	16	2	2
Rock Bass	321	721	137	1,261
Round Goby	67,759	68,867	18,054	18,146
Sucker Family	---	---	---	6
Sunfish (Bluegill/Green Sunfish/Redear/ Pumpkinseed)	22	22	267	608
Walleye	6	6	---	---
Temperate Bass (White perch/bass)	---	23	---	16
	68,140	**69,851**	**18,712**	**20,445**

LaPorte County and 16.5% (576) were from Porter County. Out-of-state angler parties comprised 18.4% of the total. Illinois residents represented approximately 90 percent of the out-of-state fishing parties, primarily Cook and Will residents. Anglers representing sixty other Indiana counties fished Lake Michigan and its tributaries of Trail Creek, East branch of the Little Calumet River and Salt Creek during 2004.

LITERATURE CITED

Breidert, B., J. Clevenger, T. DeSorcie, M. Ebner, R. Elliot, J. Palla, S. Robillard, M. Toneys and S. Thayer. 2005. Harvest of fishes from Lake Michigan during 2004. Great Lakes Fish. Comm. Lake Michigan Committee Annual Report. 16p.

Clapp, D. and J. Dettmers. 2004. Yellow perch research and management in Lake Michigan: evaluating progress in a cooperative effort, 1997-2001. Fisheries 29 (11):11-18.

Eshenroder, R., M. Holey, T. Gorenflo, and R. Clark, Jr. 1995. Fish-community objectives for Lake Michigan. Great Lakes Fish. Comm. Spec. Pub. 95-3. 56p.

Palla, J. 2000. Lake Michigan creel survey, 1999. Annual Report of the Lake Michigan Research Office to Division of Fish and Wildlife, Indiana Department of Natural Resources, Indianapolis. 51p.

Palla, J. 2003. Lake Michigan creel survey, 2002. Annual Report of the Lake Michigan Research Office to Division of Fish and Wildlife, Indiana Department of Natural Resources, Indianapolis. 41p.

Palla, J. 2004. Lake Michigan creel survey, 2003. Annual Report of the Lake Michigan Research Office to Division of Fish and Wildlife, Indiana Department of Natural Resources, Indianapolis, 43p.

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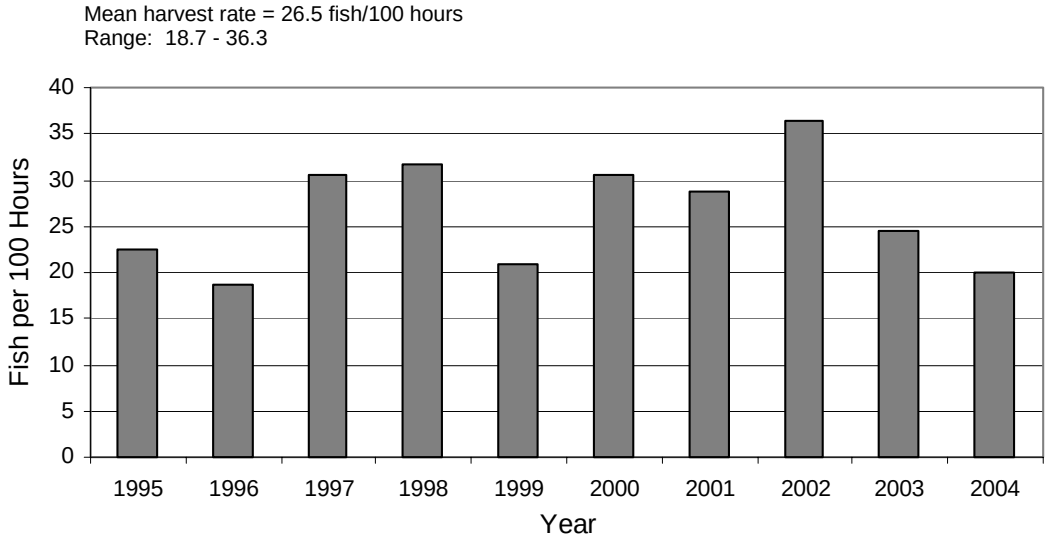


Figure 1. Trout and salmon harvest rate from the IDNR Lake Michigan creel survey during 1995 through 2004, based on directed effort.

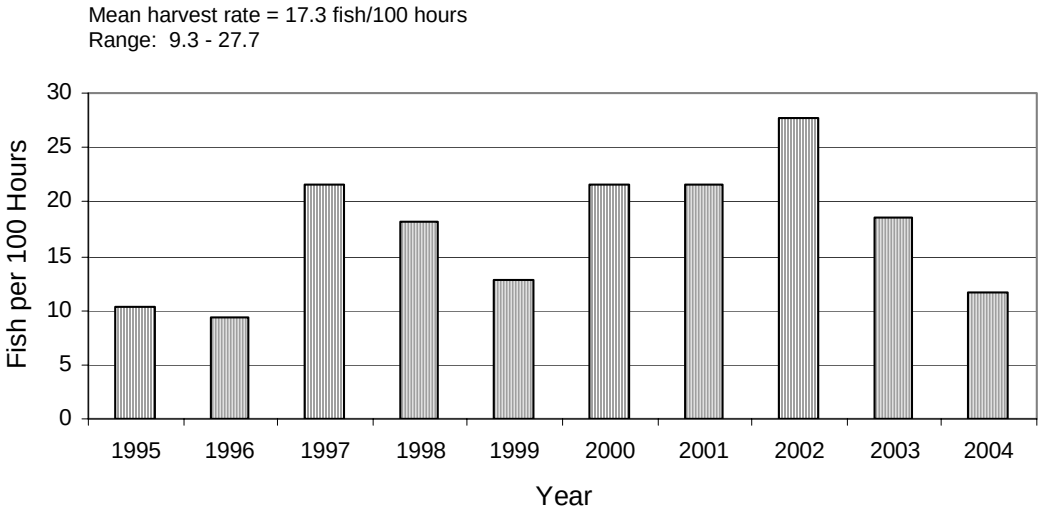


Figure 2. Harvest rate for coho salmon from the IDNR Lake Michigan creel survey during 1995 through 2004, based on directed effort.

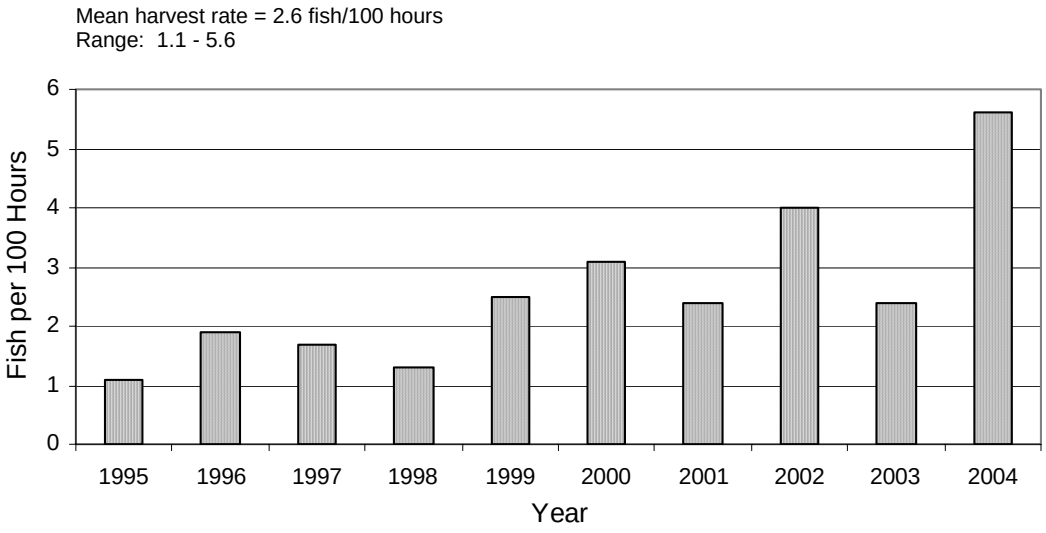


Figure 3. Harvest rate for Chinook salmon from the IDNR Lake Michigan creel survey during 1995 through 2004, based on directed effort.

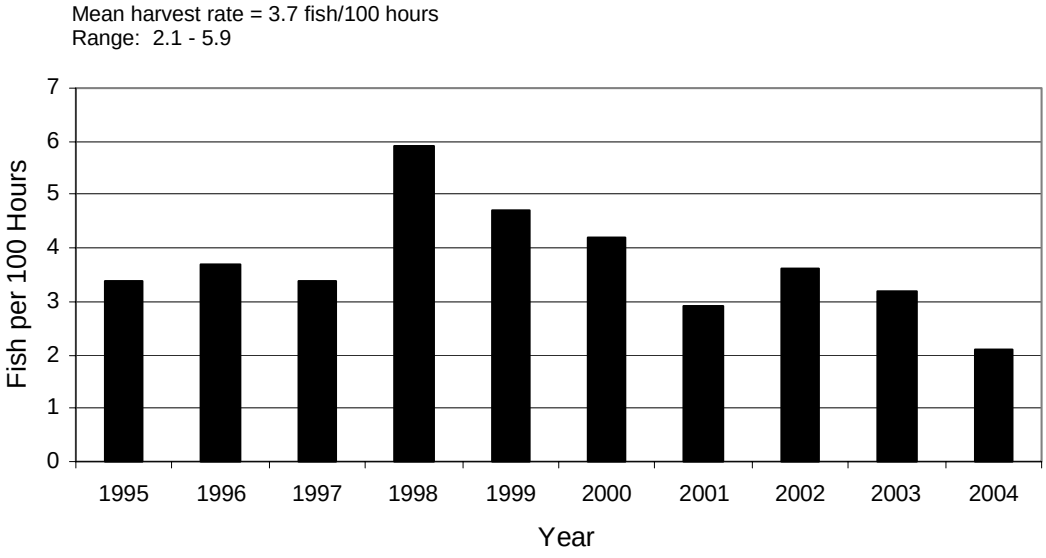


Figure 4. Harvest rate for steelhead from the IDNR Lake Michigan creel survey during 1995 through 2004, based on directed effort.

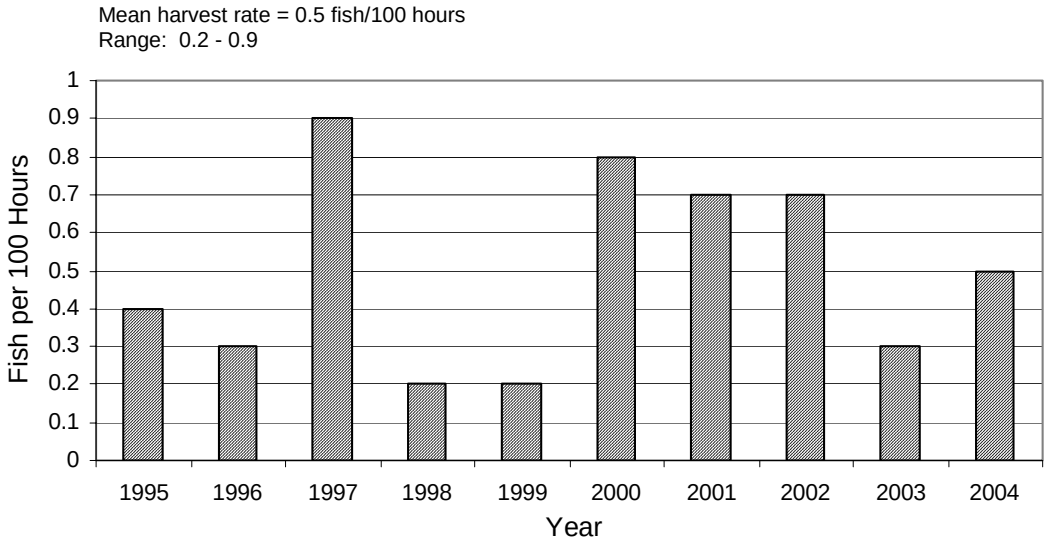


Figure 5. Harvest rate for brown trout from the IDNR Lake Michigan creel survey during 1995 through 2004, based on directed effort.

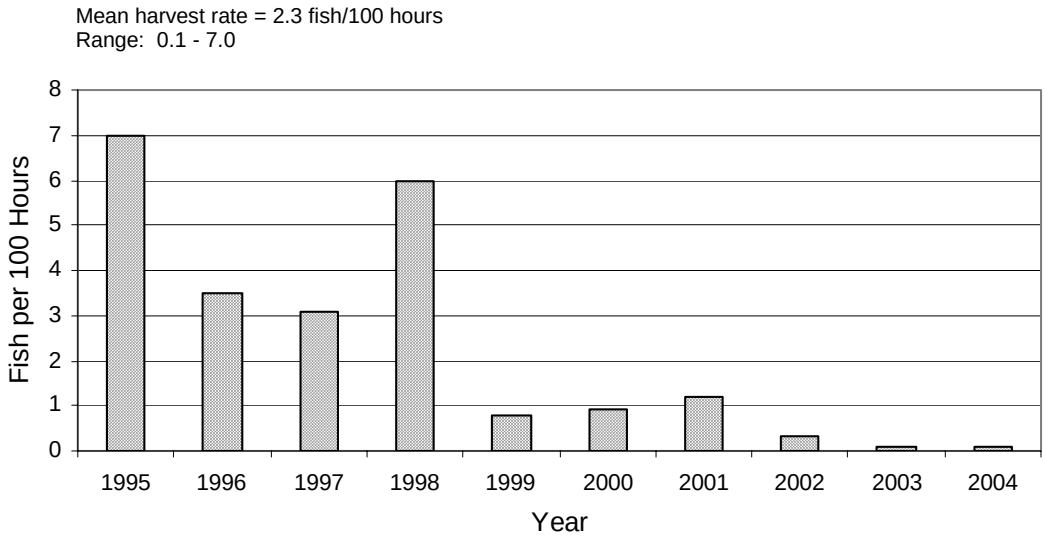


Figure 6. Harvest rate for lake trout from the IDNR Lake Michigan creel survey during 1995 through 2004, based on directed effort.

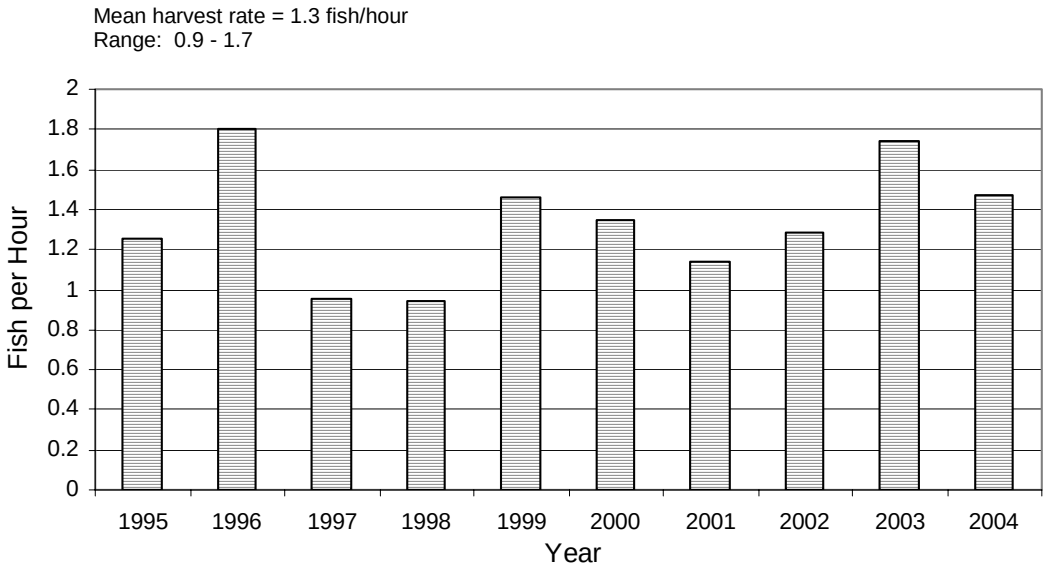
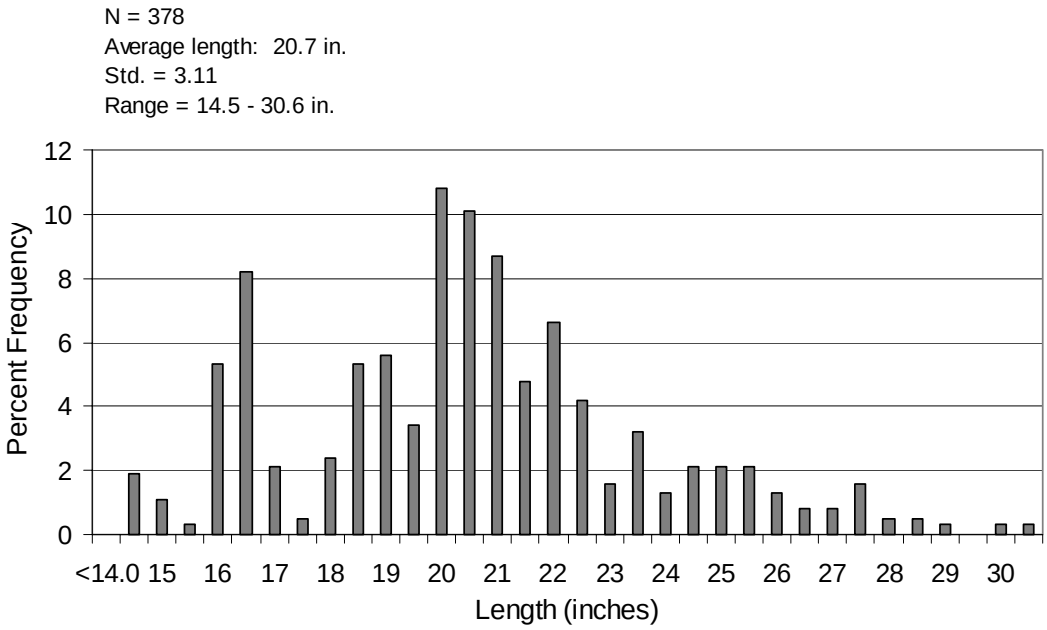
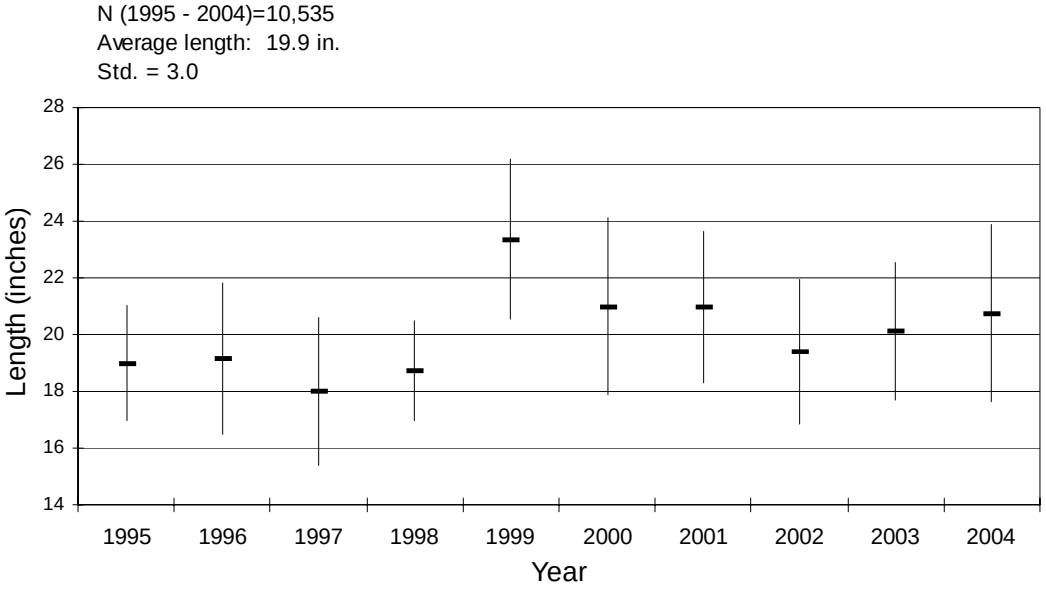


Figure 7. Harvest rate for yellow perch from the IDNR Lake Michigan creel survey during 1995 through 2004, based on directed effort.

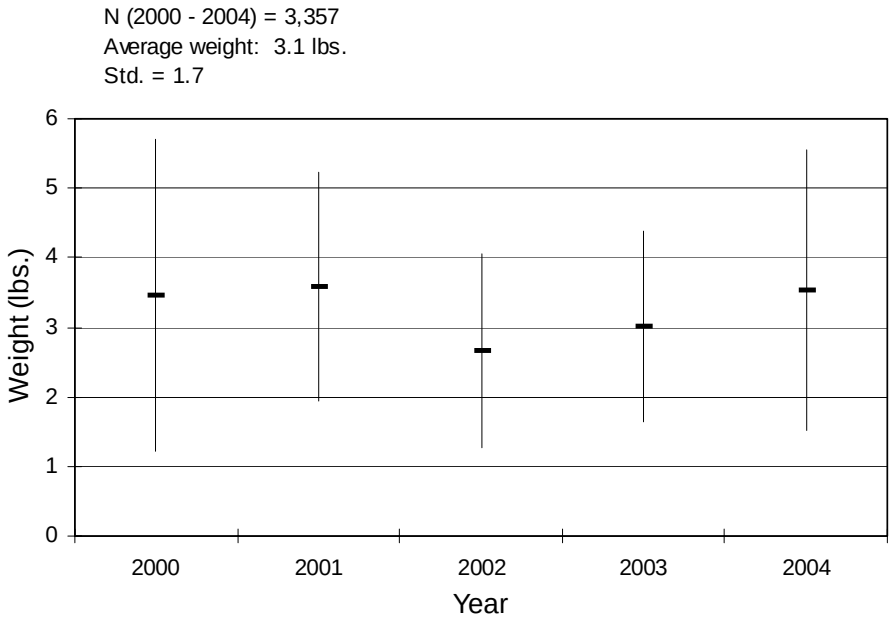
Appendix 1.



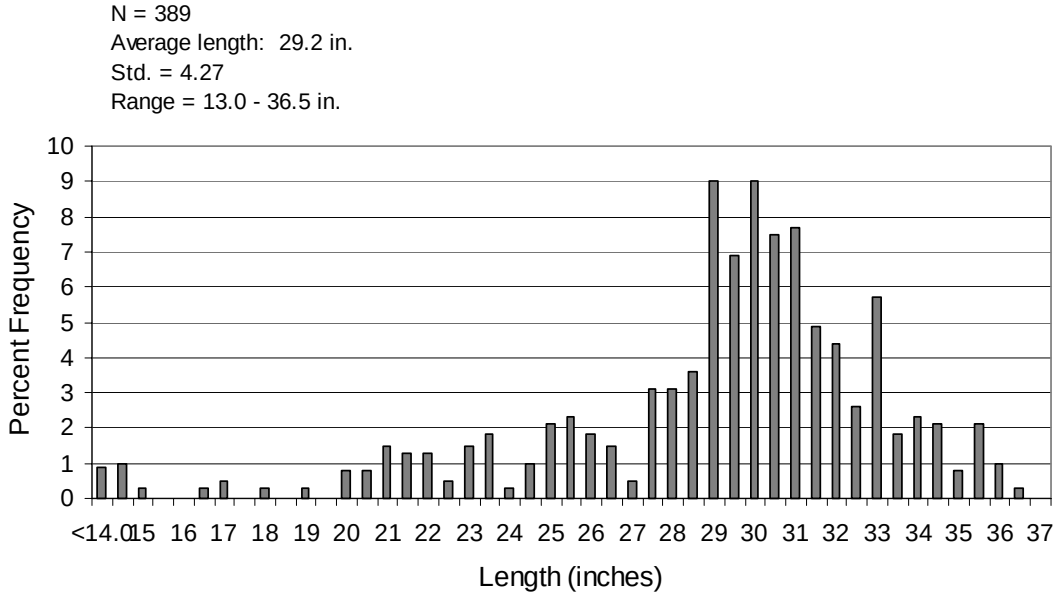
Appendix 1 (a). Length frequency of coho salmon observed in the IDNR Lake Michigan creel survey during 2004.



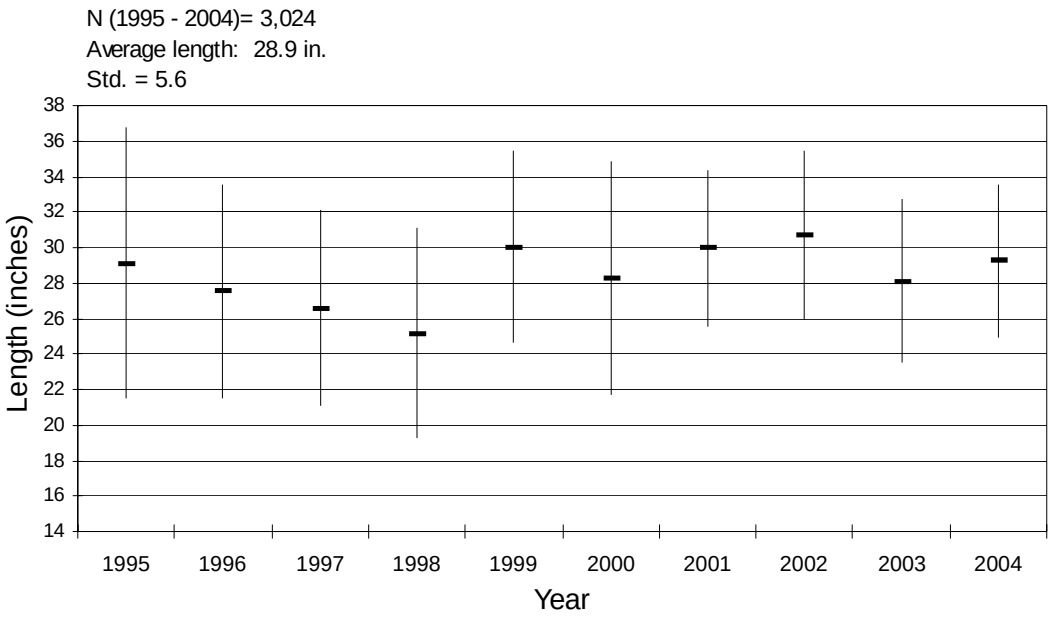
Appendix 1 (b). Average total length of creeled coho salmon from the IDNR Lake Michigan creel survey during 1995 through 2004.



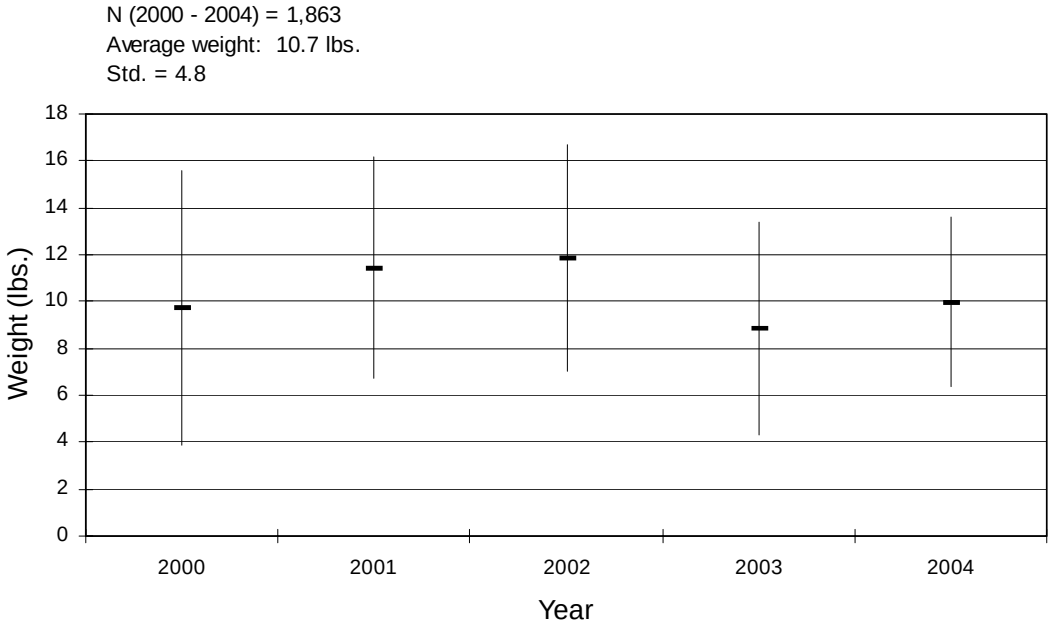
Appendix 1 (c). Average weight of creeled coho salmon from the IDNR Lake Michigan creel survey during 2000 through 2004.



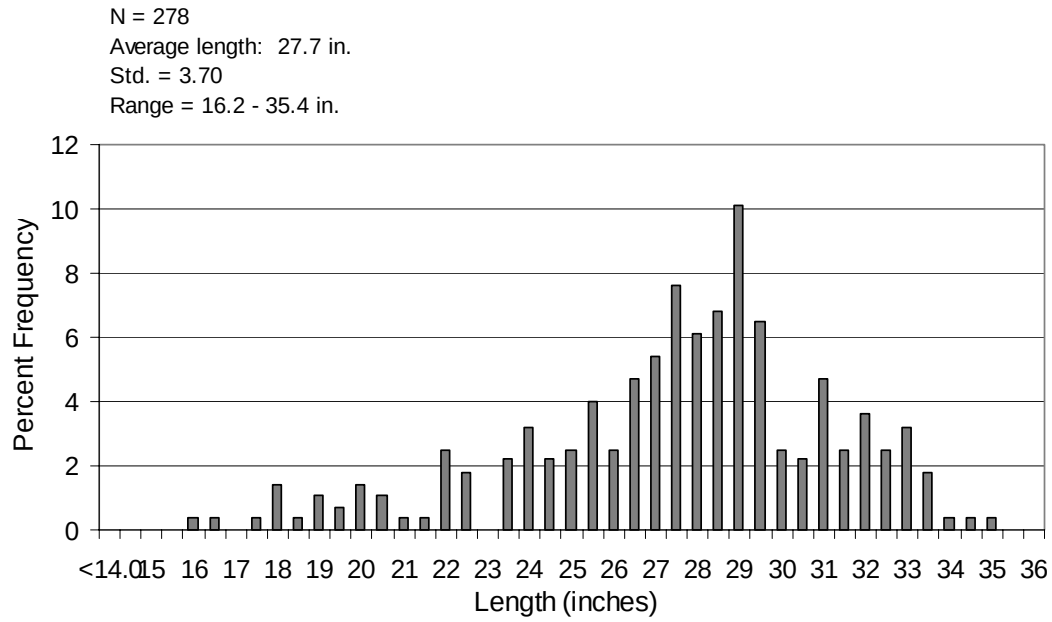
Appendix 1 (d). Length frequency of Chinook salmon observed in the IDNR Lake Michigan creel survey during 2004.



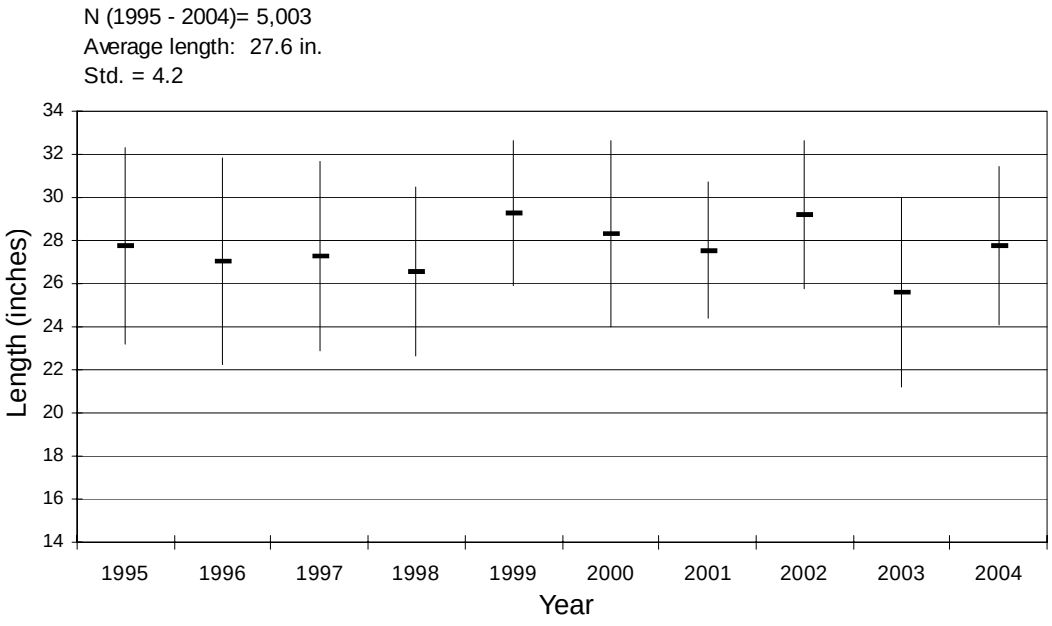
Appendix 1 (e). Average total length of creeled Chinook salmon from the IDNR Lake Michigan creel survey during 1995 through 2004.



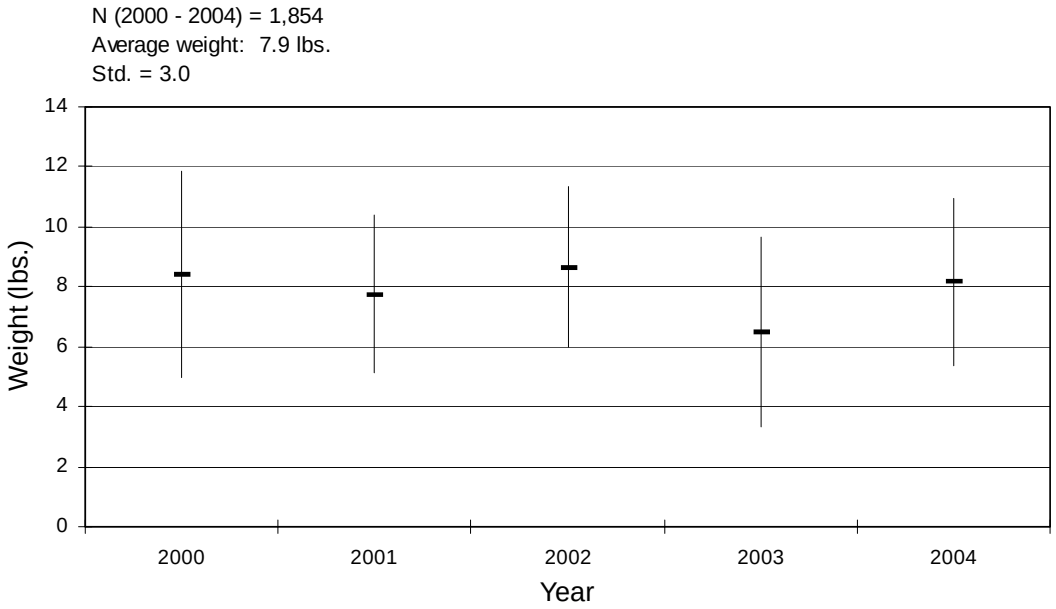
Appendix 1 (f). Average weight of creeled Chinook salmon from the IDNR Lake Michigan creel survey during 2000 through 2004.



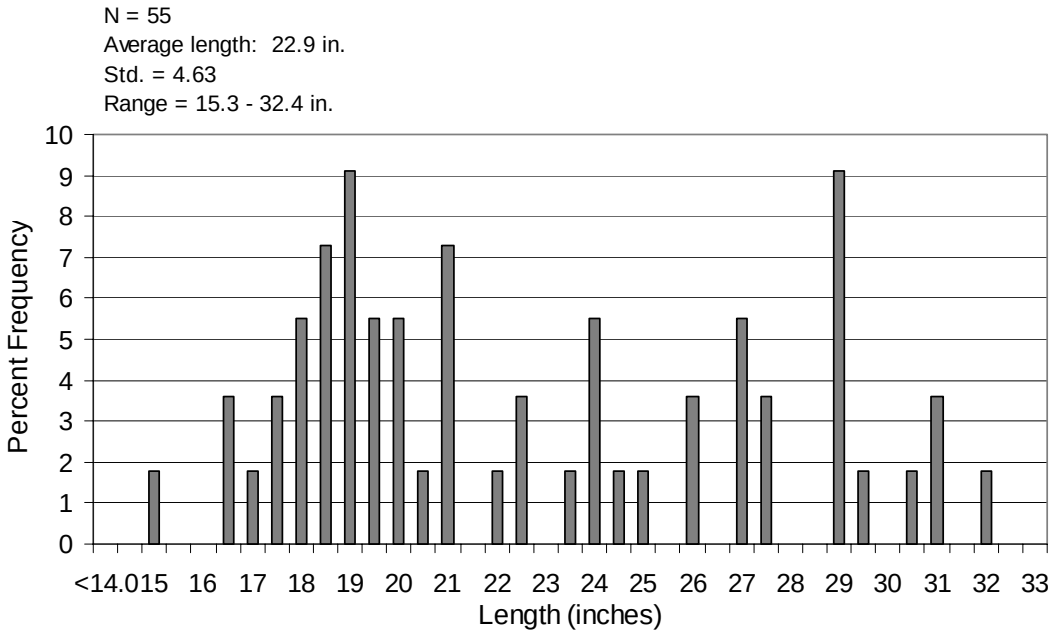
Appendix 1 (g). Length frequency of steelhead observed in the IDNR Lake Michigan creel survey during 2004.



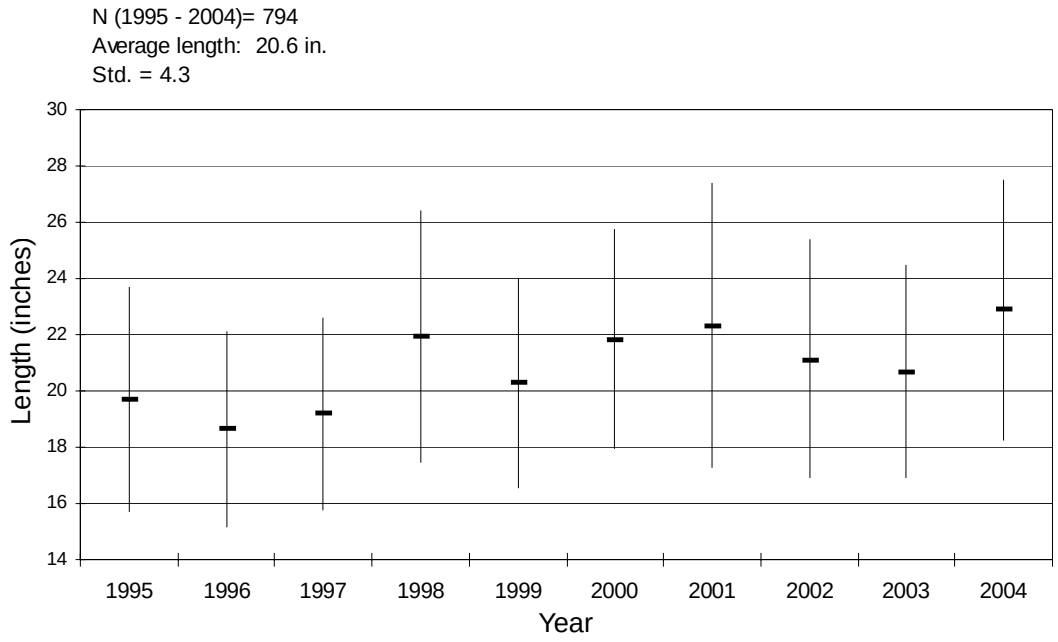
Appendix 1 (h). Average total length of creeled steelhead from the IDNR Lake Michigan creel survey during 1995 through 2004.



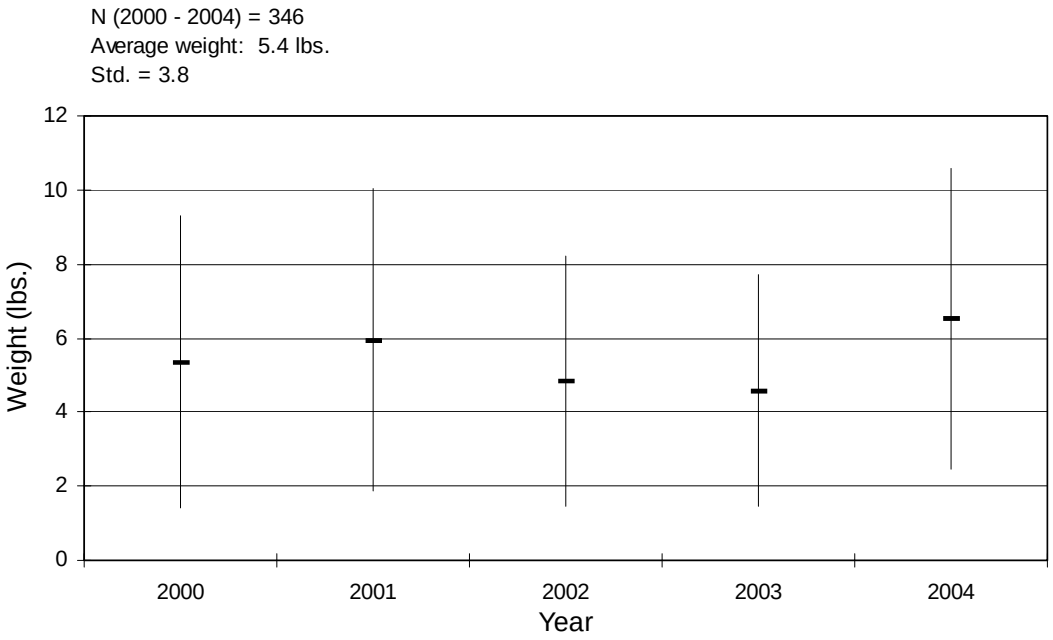
Appendix 1 (l). Average weight of creeled steelhead from the IDNR Lake Michigan creel survey during 2000 through 2004.



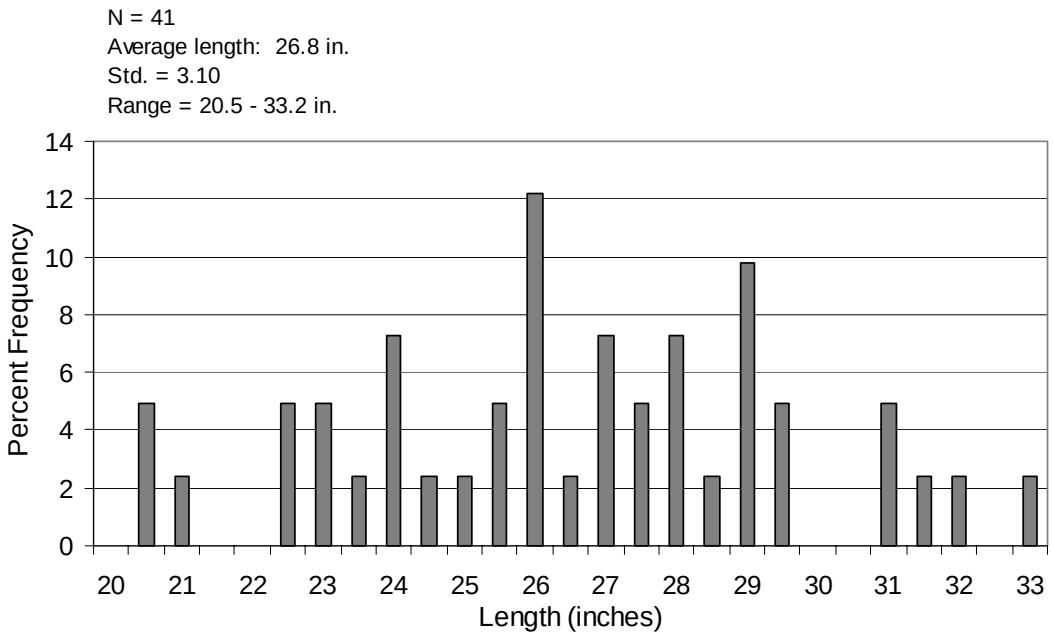
Appendix 1 (j). Length frequency of brown trout observed in the IDNR Lake Michigan creel survey during 2004.



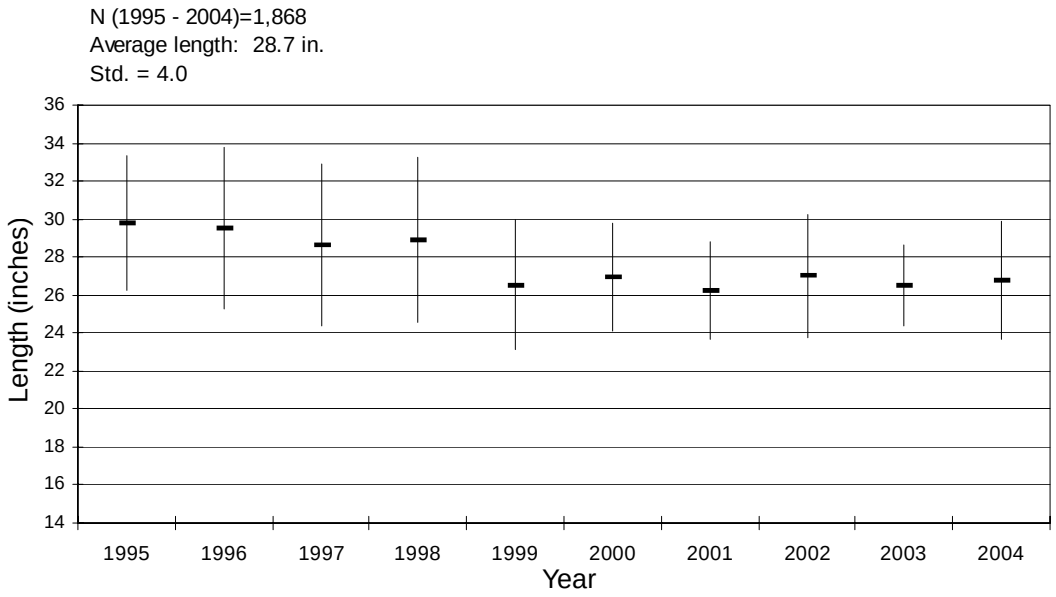
Appendix 1 (k). Average total length of creeled brown trout from the IDNR Lake Michigan creel survey during 1995 through 2004.



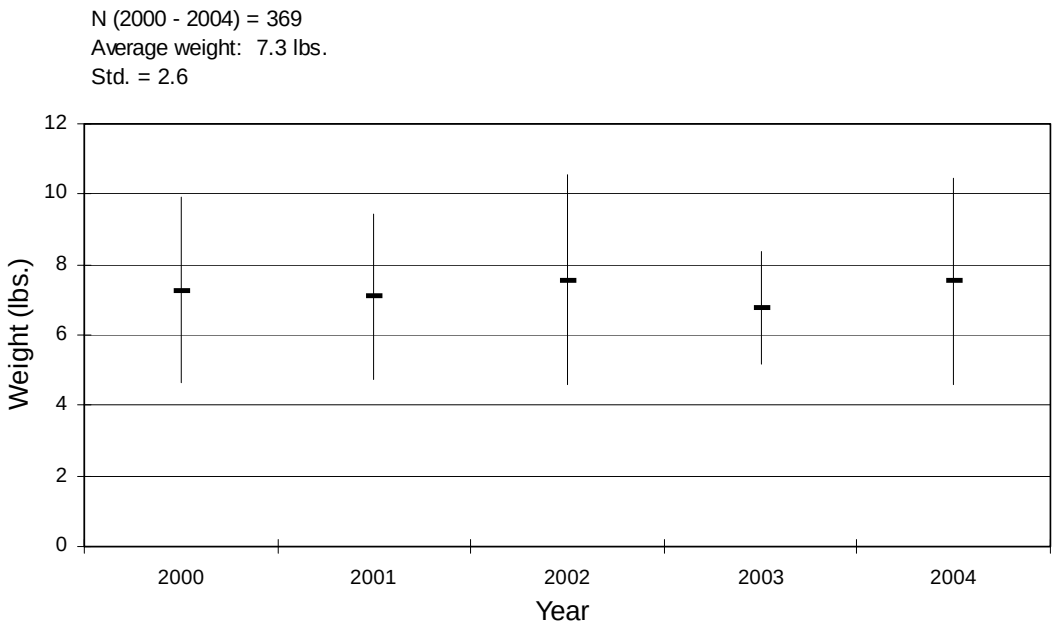
Appendix 1 (l). Average weight of creeled brown trout from the IDNR Lake Michigan creel survey during 2000 through 2004.



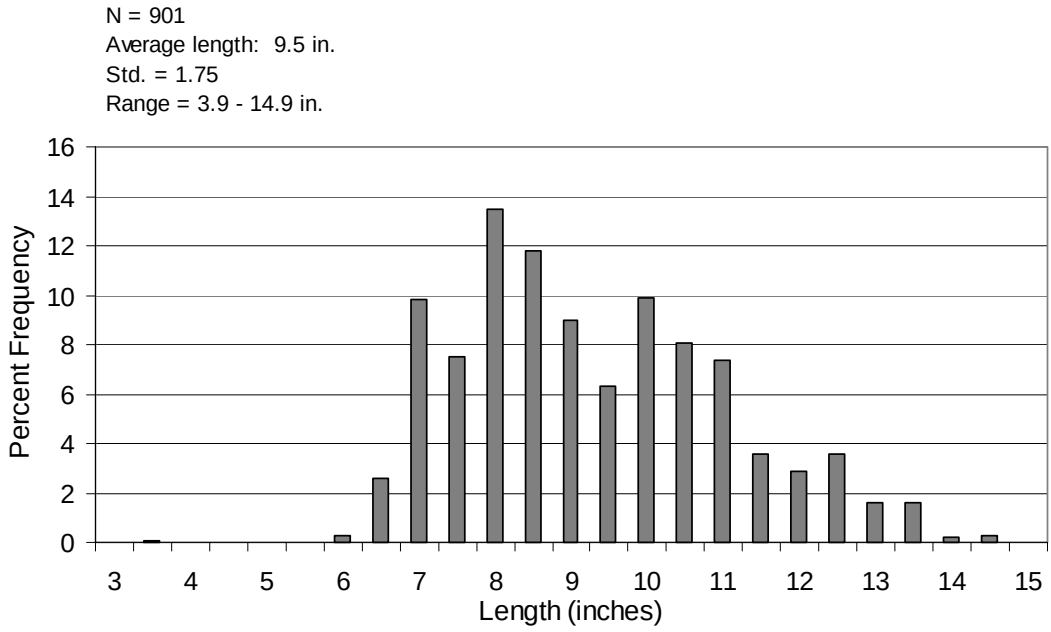
Appendix 1 (m). Length frequency of lake trout observed in the IDNR Lake Michigan creel survey during 2004.



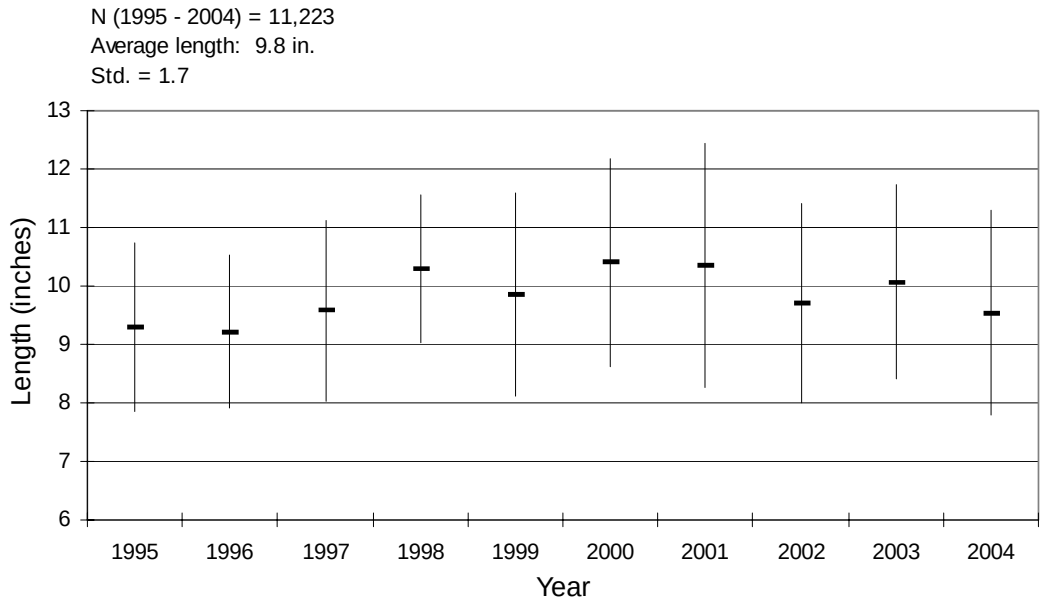
Appendix 1 (n). Average total length of creeled lake trout from the IDNR Lake Michigan creel survey during 1995 through 2004.



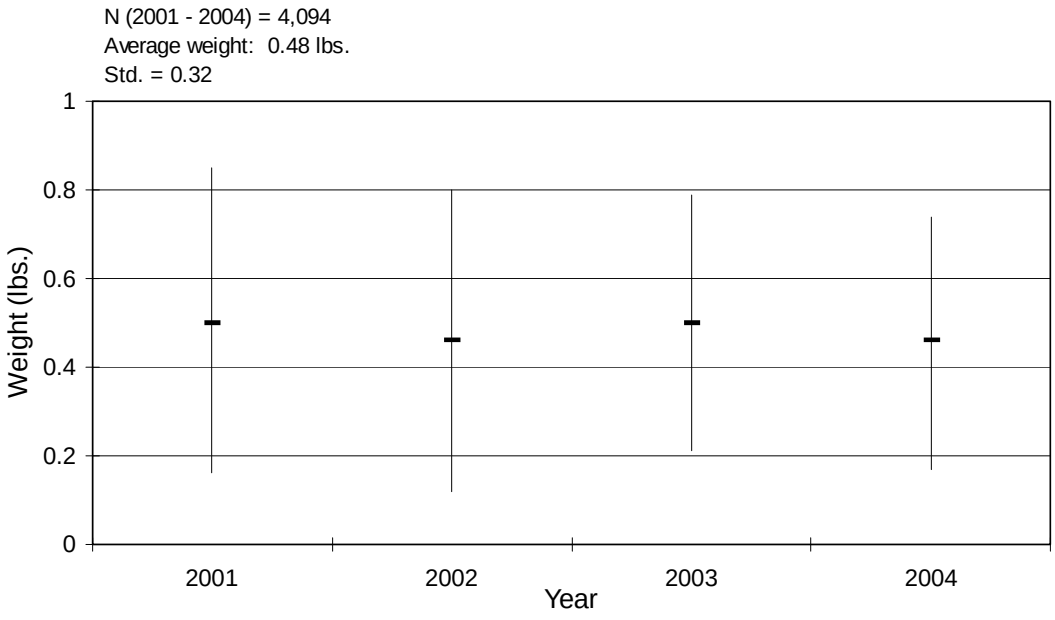
Appendix 1 (o). Average weight of creeled lake trout from the IDNR Lake Michigan creel survey during 2000 through 2004.



Appendix 1 (p). Length frequency of yellow perch observed in the IDNR Lake Michigan creel survey during 2004.



Appendix 1 (q). Average total length of creeled yellow perch from the IDNR Lake Michigan creel survey during 1995 through 2004.



Appendix 1 (r). Average weight of creeled yellow perch from the IDNR Lake Michigan creel survey during 2001 through 2004.